Mimulus Memo

California Native Plant Society
KERN CHAPTER

SEPTEMBER 2019

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EVENTS

SEPTEMBER

19 – Chapter Meeting, 6pm
Program, 7pm

OCTOBER

17 – Chapter Meeting, 6pm
Program, 7pm

NOVEMBER

21 – Chapter Meeting, 6pm
Program, 7pmg

DECEMBER

18 – No meeting

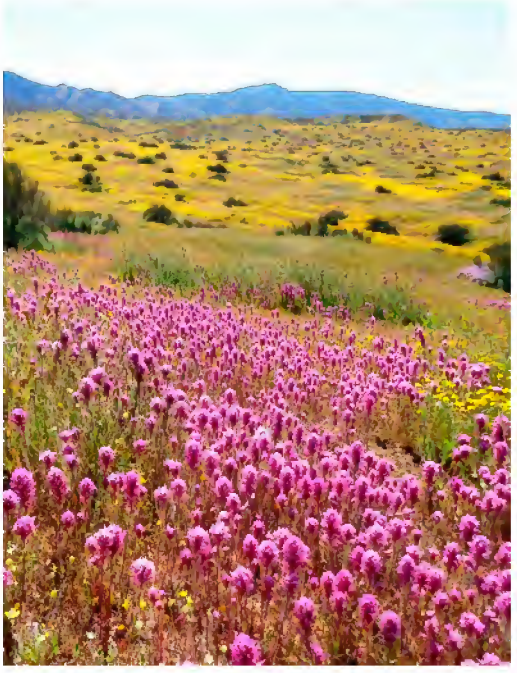
Super Bloom 2019: A Photo Journal

Part Two

by Nancy Nies

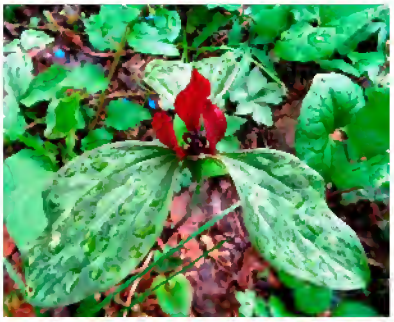
photos by Nancy Nies

April 10 – **Above:** Kern CNPS group among *Lasthenia* sp., *Castilleja exserta, and Layia platyglossa* in the northern Carizzo.
Right: *Lasthenia (goldfields)* and *Castilleja exserta* (owl's clover in the southern Carizzo



APRIL 10 – *Lasthenia* sp. (goldfields) and *Castilleja exserta* (owl's clover): This colorful combination book-ended the wondrous day-long spectacle witnessed by Kern CNPS members on the chapter field trip, led by botanist **Denis Kearns**, to **Carrizo Plain National Monument**. We also saw vast expanses of *Layia platyglossa* (tidy tips), *Leptosyne bigelovii* (Bigelow coreopsis) (tickseed), *Phacelia ciliata* (Valley phacelia), *Caulanthus anceps* (*Guillenia lemmonii*) (Lemmon's mustard), and *Lepidium jaredii* (Jared's peppergrass) as well as some *Delphinium* sp. (larkspur) and *Malacothrix coulteri* (snake's head) and wonderful displays of *Eremalche parryi* ssp. *kernensis* (Kern mallow) and the rare *Caulanthus californicus* (California jewelflower). We were fortunate to experience the Carrizo as Denis said he had never seen it before, during what he called "a super-duper bloom."

APRIL 16 to **MAY 1** – *Trillium recurvatum* (prairie trillium) and *Mertensia virginica* (Virginia bluebells):



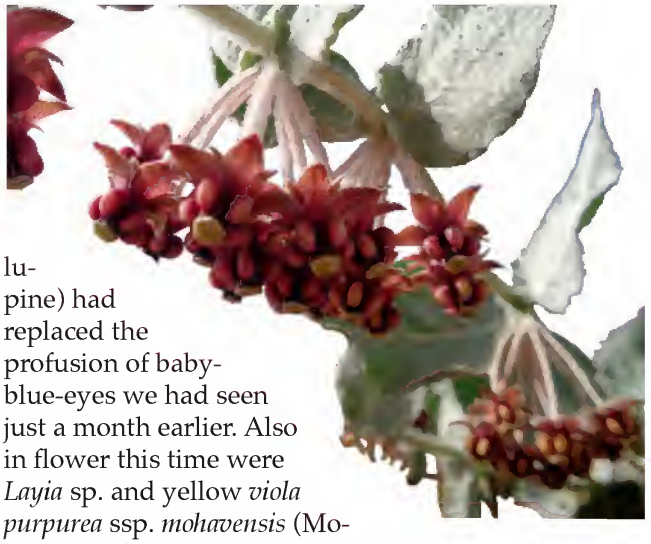
April 16 - May 1–
Above: *Trillium recurvatum (prairie trillium);*
Below: *Mertensia virginica (Virginia bluebells)*

No, we didn't see these in California, but far beyond its borders – in southern Indiana! While exploring Paul's home state during the latter half of April, we got to know various woodland wildflowers native to the Eastern US. The wooly blue violet was No. 1 for its sheer numbers, growing thick and wild in lawns, parks and woodlands. However, we also saw *Viola sororia f. priceana* (Confederate violet), *Viola pubescens eriocarpa* (common yellow violet), and *Viola sororia albiflora* (white wood violet). We also "met" *Trillium recurvatum* (prairie trillium), *Trillium flexipes* (drooping trillium), *Silene virginica* (fire pink), *Packera aurea* (golden ragwort), *Dodecatheon meadia* (shooting star), and *Phlox divaricata* (woodland phlox). In addition, we were enchanted by the countless native trees blooming in parks and gardens, and along highways and byways: *Cirsus canadiensis* (Eastern redbud), with its lovely magenta flowers, and *Cornus florida* (flowering dogwood) with its white or coral-pink blooms.

MAY 3 – *Platystemon californicus* (cream cups): On a return visit to our "ranch" near Tehachapi, large areas of cream cups, poppies, and *Lupinus bicolor* (miniature

May 3 – **Below:** *Platystemon californicus* (cream cups)

May 18 – **Above**: Poppies and windmills;
Below: *Asclepias californica* (California milkweed).



lupine) had replaced the profusion of baby-blue-eyes we had seen just a month earlier. Also in flower this time were *Layia* sp. and yellow *viola purpurea* ssp. *mohavensis* (Mojave violet). Since our last visit, *Lasthenia* sp. (goldfields) had bloomed and were now fading, but *Phacelia egena* (rock phacelia) was just starting to bloom.

May 18 – *Asclepias californica* (California milkweed) and *Calochortus kennedyi* (desert mariposa lily) were among the three dozen species we saw in bloom on our 33rd annual windmill-wildflower hike near Tehachapi. The hike, which Paul started in 1986 under the auspices of the Sierra Club, takes hikers over 5,000-foot Cameron Ridge on a six-mile segment of the Pacific Crest Trail. This year, we were amazed at the wide variety of blooms in addition to those pictured here. Never, in over thirty years, had we seen such a wildflower show on this hike. Most noticeable and abundant were poppies, bird's-eye gilia, *Mirabilis* sp. (four o'clocks), *Ericameria linearifolia* (narrowleaf goldenbush), the fragrant *Lupinus excubitus* (grape-soda lupine), and *Lepidium fremontii* (desert alyssum). Rewarding us toward the end of the hike were the first blooms of the blue *Penstemon pseudospectabilis* (desert penstemon), and the large white flowers of *Oenothera californica* (California evening primrose).

In Kern County and beyond — from Bakersfield to the Kern Canyon, from Woody to Tehachapi, from the Carrizo Plain to Indiana — it was unforgettable spring with spectacular wildflowers. We will long remember the color and beauty of Super Bloom 2019! ✿

May 18 –
Above: *Calochortus kennedyi* (desert mariposa lily)
Below: *Oenothera californica (California evening primrose)*

California Native Plant Society

CNPS is the leader for providing reliable information on California native plants and plant conservation. Comprehensive information about California's flora and vegetation communities is available throughout the state for conservation and educational purposes. CNPS's leadership influences personal ethics and actions, as well as public policy for native plant protection.

Chapter Meetings

upcoming TOPICS

Thursday, September 19, 2019 - 7 pm
Presenter: **Ron Dietz**, founder, Dietz Hydroseeding Co.
Topic: *Hydroseeding*

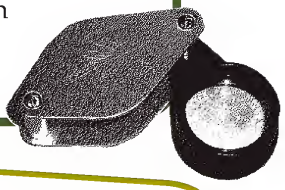
Thursday, October 17, 2019 - 7 pm
Presenters: **Kern CNPS members**
Topic: *How to Use Wildflower Apps and Calflora*

Thursday, November 21, 2019 - 7 pm *
Presenter: **Ellen & Brian Cypher**
Topic: *The San Joaquin Desert: Ecologially Misunderstood and Overlooked.*

Thursday, December 18, 2019 -
NO MEETING

All chapter meetings are held the **3rd Thursday** of each month, usually at 1300 17th Street, Room 1A or 1B, Bakersfield, CA. **Check website for any change of venue.**

Meeting times:
6 pm — Discussion groups on plant identification and native plant gardening
7 pm — Program presentation



Thank you to:

... **Jorge Ochoa**, for his presentation on the *Griffith Park Fire - Part Deux*

... **Lucy Clark** for organizing the annual chapter campout at Horse Meadow

... the hardy cacti waterers — **Lucy Clark** and **Clyde Golden**, **Deb See** and **Bill Moffat**, **Fred Chynoweth**, **Bill Nelson**, and **Paul Gipe** ✿

President's Message:
Plants with no roots, no stems, no leaves and no chlorophyll:

The Stemsuckers

by Rich Spjut

WHAT ARE STEMSUCKERS? AS THE TITLE may suggest, they are parasites, classified in the genus *Pilostyles*, in a small family, *Apodanthaceae* — with one other genus — *Apodanthera*, also parasitic. They live entirely **inside** other plants, and only become visible when they flower; the flowers, which burst out through the host stem, are not likely to be seen unless one has made been made aware of *Pilostyles*, in fruit resembling perhaps tiny candy balls stuck on the outside of the bark of woody stems. *Pilostyles* hosts are legume genera, whereas *Apodanthera* hosts are genera in the willow family, *Salicaceae*. The vegetative part of the plant that grows inside the host generally requires magnification greater than 60x to see the endophytic system that consists of tiny hair-like filaments intertwined among the host vascular cells, with "sinkers" analogous to miniature eyedroppers, about 1/20th of a millimeter in diameter. Sinkers penetrate from near the host surface towards the plant's water-pipes (xylem), sucking up water and dissolved nutrients as the host transports the solution of soil nutrients taken up by its roots to the stems and leaves above. The 'eyedropper cap' becomes the flower that bursts outwards though the host stem. As the host plant continues to grow, so too does the *Pilostyles* infection, keeping in phase with new apical growth (isophasic growth).

An Australian stemsucker, *Pilostyles coccoidea* fruit (K.R.Thiele 3495), each fruit ~3–4 mm tall, 2–3 mm wide. Waddi Road, 0.7 km from the Brand Highway, Western Australia, type locality. Kevin R. Thiele, Stephen J. Wylie, Linda Maccarone, Penelope Hollick and Jennifer A. McComb. 2008. *Pilostyles coccoidea (Apodanthaceae)*, a new species from Western Australia described from morphological and molecular evidence. Nuytsia 18: 273–284. From Wikimedia Commons. Repository. KRT 3242.

SEINet (Accessed 25 Aug. 2019): Geographical distribution of Thurber's stemsucker (*Pilostyles thurberi*)

There are about 10 Pilostyles species, each very picky on who they pick on. There are three in coastal southwestern Australia: *P. coccoidea*, host *Jacksonia*; *P. collina*, host *Gastrolobium*, *Oxylobium;* and *P. hamiltonii*, host *Daviesia* four spp.); one in tropical woodlands of eastern south-central Africa *P. aethiopica*, host *Berlinia*, *Brachystegia* three spp., *Julbernardia*, *Pseudoberlinia*, and *Westia*; one in Iran *P. haussknechtii*, host *Astragalus* twelve spp., *Halimodendron*, and *Onobrychis*; one in Peru, Bolivia, Chile and Argentina, *P. berteroi*, host *Adesmia*, eleven spp.; one widespread in dry forests of tropical America, *P. blanchetii*, host *Bauhinia*, *Cassia*, *Dioclea*, *Galactia*, *Mimosa*, and *Schnella*; one in Colombia, *P. boyacensis*, host *Dalea*; one in southern Mexico and Central America, *P. mexicana*, host *Calliandra;* one in Sonoran and Chihuahuan deserts, *P. thurberi*, host *Psorothamnus*, *Dalea* three spp. Only *P. boyacensis* and *P. thurberi* share the same host genus (*Dalea*); *P. boyacensis* was recently described and found most related to *P. thurberi*.

Multiple genera that host a stemsucker species are closely related; for example, *Psorothamnus* was formerly *Dalea* in the older California floras. Both genera have conspicuous colored aromatic spherical glands on stems, leaves and fruits. Most *Pilostyles* species seem to be geographically isolated from one another except for some overlap of three species in Central America.

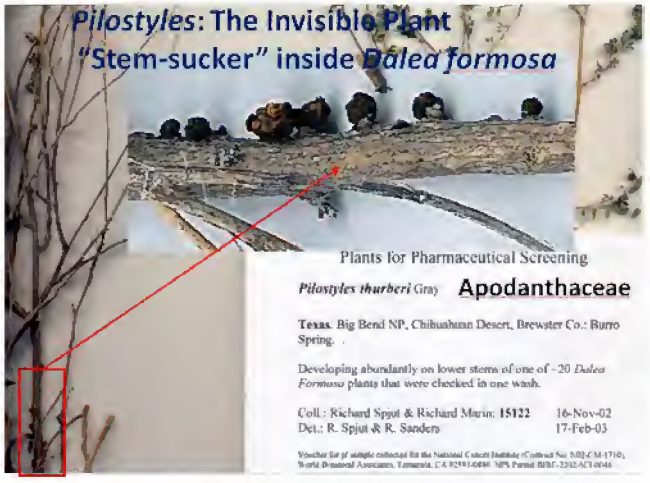
Our California species, *Pilostyles thurberi*, specifically

likes Emory's indigo bush (*Psorothamnus emoryi*), which is common in Riverside and Imperial counties, but only plants in Imperial and San Diego counties get infected. I have collected it on *Dalea formosa* in Big Bend region of Texas. Not all *Dalea* plants in a wash host *Pilostyles*, only about one in 20 plants (label for voucher specimen, 16 Nov. 2002),

Pilostyles relationships go far beyond species and genera. The hosts for the Mediterranean and semi-desert species (Iran, Australia, Chile, southwestern N America) all belong to the subfamily Faboideae, whereas for those species in tropical regions, the host genera belong to other subfamilies.

How does *Pilostyles* reproduce and spread? Flowers that may develop yearly or seasonally are unisexual and lack color differentiation of petals, so there are "tepals" and "bracts." Also, the host may have only one *Pilostyles* individual, meaning only one sex. Bees, wasps, flies and ants have been noted to be pollinators. Thus, pollinators have to fly or crawl to another plant, to be successful in pollination, and, of course, it has to be a host infected by a female *Pilostyles*. The ovary of the flower matures into an undifferentiated pericarpium (fruit) that has been referred to as a berry, which may contain a hundred or more tiny seeds, a seed in *P. coccoidea* ~ 0.4 mm long, ± globular to broadly ellipsoid. For a seed to germinate, it has to find an uninfected host of the same species, so not just any old legume will do. Two of the Australian species are reported to have both sexes on the same host.

Judging from the geographical and taxonomic data, *Pilostyles* probably originated in Gondwana before it split apart and then spread north into the tropical regions and adapting to semi-arid regions in North America and Southwest Asia. ✿



Voucher specimen of P. thurberi collected by Richard Spjut from Big Bend region of Texas. Spjut & Marin 15122, 16 Nov. 2002 (BRIT US).

Conservation Corner
Request for Your Help!

by Lucy Clark & Fred Chynoweth

THE U.S. FOREST SERVICE HAS ISSUED A **Revised Draft Environmental Impact Statement /Planning Document** for our Sequoia and Sierra Forests that will be in effect for perhaps 20 years. This document can be found at: *https://www.fs.usda.gov/detail/r5/landmanagement/planning/?cid=STELPRD3802842*

The Forest Service favors **Alternative B** but conservation groups urge the public to support **Alternative C** with additions from **Alternative E**.

Alternative C recommends more wilderness protection, proposes more acres of forest restored and more riparian and meadow restoration. **The FIRST addition recommended** is to add "backcountry management areas", using boundaries developed by conservation groups which would be aimed at reducing conflicts with motorized and mountain bike trails.

The SECOND addition needed is to address the problem evident in chapter 2, under the title "*Animal and Plant Species*" (*page 47*) where the Draft Plan Revisions have within their plan components **NO** STANDARDS REQUIRING SURVEYS for at-risk plant species before logging, prescribed fire, or any other projects. Knowing if, and to what extent, at-risk plants occur on a proposed project site is BASIC to the planning and execution of the project in a manner that preserves plant species and associated habitats in our forests.

Pre-project surveys carried out during appropriate growth periods by botanists are necessary to ensure the survival of at-risk plants and other essential components in the Sierra and Sequoia National Forests. We recommend that such standards be included in plan components, to protect at-risk plant species, before any plan is finalized.

- You could start your letter with your favorite location in one of the forests...and tell WHY.
- Follow that with your support for **Alternative C,** ...and tell WHY.
- And then tell why you support the backcountry areas in **Alternative E**.
- The **big issue** is the need to do botanical surveying before they do any work, so they know what grows where, so that plants of concern/ at risk plants can be protected.

Makes sense, no? Do it!

Due date is **September 26, 2019**!
Address found at USFS site listed above. ✿

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KERN CHAPTER

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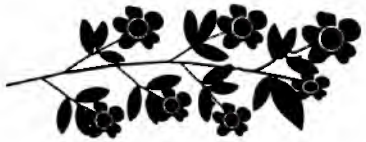

Inside this Issue:

SUPER BLOOM 2019 - PART II
THE STEMSUCKERS
DATES & TOPICS

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The Kern Chapter of the

California Native Plant Society

California Native Plant Society meets the third Thursday of each month at:
Kern County Superintendent of Schools
City Centre, Room 1A or 1B
1300 17th Street, Bakersfield, CA.
Chapter website: kern.cnps.org

The California Native Plant Society is a non-profit organization dedicated to the conservation of California native plants and their natural habitats, and to increasing the understanding, appreciation, and horticultural use of native plants. CNPS has 31 chapters throughout the state and membership is open to all persons — professional and amateur — with an interest in California's native plants. Members have diverse interests including natural history, botany, ecology, conservation, photography, drawing, hiking and gardening. As a Kern County resident, your membership includes Fremontia, *a quarterly journal with articles on all aspects of native plants; the* Bulletin, *a statewide report of activities and schedules; and* The Mimulus Memo, *the newsletter of the Kern Chapter.*

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